

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of  
John R. MURPHY et al.

International Application No.  
PCT/US00/29231

International Filing Date:  
23 October 2000

For: VACCINE COMPOSITIONS

X

BOX SEQUENCE  
Commissioner for Patents  
Washington, D.C. 20231

STATEMENT ACCOMPANYING SEQUENCE LISTING

Sir:

Applicants enclose herewith the sequence listing in computer readable form (*i.e.*, a diskette) as well as a paper copy for the above referenced U.S. National application. The sequence listing does not include matter which goes beyond the content of the Application as filed and the information recorded on the diskette is identical to the written sequence listing.

Respectfully submitted,

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KRUMHOLZ & MENTLIK, LLP

  
Gina Maldonado

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09868753-061201

SEQUENCE LISTING

<110> Murphy, John R.  
O'Lear, Edward  
Harrison, Robert J.

<120> Vaccine Compositions

<130> AMSC 3.3-001

<140> To be assigned

<141>

<150> PCT/US00/29231

<151> 2000-10-23

<160> 36

<170> PatentIn Ver. 2.1

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<211> 24

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<213> Artificial Sequence

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<400> 1

accagatctg ccgaaaaact tcga

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<210> 2

<211> 25

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

<400> 2

accagatctc cgccttttagt attta

25

<210> 3

<211> 27

<212> DNA

<213> Unknown Organism

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<223> Description of Unknown Organism: Native tox  
operator

<400> 3

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27

09060753 061201

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<212> DNA  
<213> Artificial Sequence

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Consensus-binding sequence

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<212> DNA  
<213> Artificial Sequence

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<212> PRT  
<213> Mycobacterium tuberculosis

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Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu  
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met  
35 40 45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu  
50 55 60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg  
65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu  
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Asn Ser Glu Asp Val  
100 105 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe  
115 120 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro  
130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly  
145 150 155 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly  
165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn  
180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val  
195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala  
210 215 220

Val Lys Val Glu Lys Val  
225 230

<210> 8  
<211> 223  
<212> PRT  
<213> *Corynebacterium diptheriae*

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1 5 10 15

Glu Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu  
20 25 30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met  
35 40 45

Glu Arg Asp Gly Leu Val Val Val Ala Ser Asp Ser Leu Gln Met Thr  
50 55 60

Pro Thr Gly Arg Thr Leu Ala Thr Ala Val Met Arg Lys His Arg Leu  
65 70 75 80

Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile Asn Lys Val  
85 90 95

His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val Glu  
100 105 110

Arg Arg Leu Val Lys Val Lys Asp Val Ser Arg Ser Pro Phe Gly Asn  
115 120 125

Pro Ile Pro Gly Leu Asp Glu Leu Gly Val Gly Asn Ser Asp Ala Ala  
130 135 140

Ala Pro Gly Thr Arg Val Ile Asp Ala Ala Thr Ser Met Pro Arg Lys  
145 150 155 160

Val Arg Ile Val Gln Ile Asn Glu Ile Phe Gln Val Glu Thr Asp Gln  
165 170 175

Phe Gln Leu Leu Asp Ala Asp Ile Arg Val Gly Ser Glu Val Glu Ile  
180 185 190

Val Asp Arg Asp Gly His Ile Thr Leu Ser His Asn Gly Lys Asp Val  
195 200 205

Glu Leu Leu Asp Asp Leu Ala His Thr Ile Arg Ile Glu Glu Leu  
210 215 220

<210> 9  
<211> 174  
<212> PRT  
<213> Staphylococcus epidermitis

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20 25 30

Ala Glu Leu Ala Gly Gln Leu Ala Lys Arg Gly Tyr Pro Glu Asp Ile  
35 40 45

Gly Asn Arg Val Leu Asp Arg Leu Ala Ala Val Gly Leu Val Asp Asp  
50 55 60

Thr Asp Phe Ala Glu Gln Trp Val Gln Ser Arg Arg Ala Asn Ala Ala  
65 70 75 80

Lys Ser Lys Arg Ala Leu Ala Ala Glu Leu His Ala Lys Gly Val Asp  
85 90 95

Asp Asp Val Ile Thr Thr Val Leu Gly Gly Ile Asp Ala Gly Ala Glu  
100 105 110

Arg Gly Arg Ala Glu Lys Leu Val Arg Ala Arg Leu Arg Arg Glu Val

115	120	125
Leu Ile Asp Asp Gly Thr Asp Glu Ala Arg Val Ser Arg Arg Leu Val		
130	135	140
Ala Met Leu Ala Arg Arg Gly Tyr Gly Gln Thr Leu Ala Cys Glu Val		
145	150	155
		160
Val Ile Ala Glu Leu Ala Ala Glu Arg Glu Arg Arg Arg Val		
	165	170

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 <211> 225  
 <212> PRT  
 <213> Mycobacterium leprae

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Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15
Asp Leu Glu Glu Glu Gly Ile Val Thr Pro Leu Arg Ala Arg Ile Ala
20 25 30
Glu Arg Pro Thr Val Ser Gln Thr Val Ser Arg Met Glu Arg Asp Gly
35 40 45
Leu Leu Arg Val Ala Gly Asn Arg His Leu Glu Leu Thr Thr Lys Gly
50 55 60
Arg Ala Met Ala Ile Ala Val Met Arg Lys His Arg Leu Ala Glu Arg
65 70 75 80
Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu Val His Ala Glu
85 90 95
Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val Glu Arg Arg Leu
100 105 110
Ile Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe Gly Asn Pro Ile
115 120 125
Pro Gly Leu Leu Asp Leu Gly Ala Gly Pro Asp Ala Ser Ala Ala Asn
130 135 140
Ala Lys Leu Val Arg Leu Thr Glu Leu Pro Ser Gly Ser Pro Val Ala
145 150 155 160
Val Val Val Arg Gln Leu Thr Glu His Val Asp Asp Ile Asp Leu Ile
165 170 175
Thr Arg Leu Lys Asp Thr Gly Val Val Pro Asn Ala Arg Val Thr Val
180 185 190
Glu Thr Ser Pro Ala Gly Asn Val Ile Ile Ile Ile Pro Gly His Glu
195 200 205

Asn Val Thr Leu Pro His Glu Met Ala His Ala Val Lys Val Glu Lys  
 210 215 220

Val  
 225

<210> 11  
 <211> 230  
 <212> PRT  
 <213> Mycobacterium tuberculosis

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 Met Asn Glu Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr  
 1 5 10 15

Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu  
 20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met  
 35 40 45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu  
 50 55 60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg  
 65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu  
 85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val  
 100 105 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe  
 115 120 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro  
 130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly  
 145 150 155 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly  
 165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn  
 180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val  
 195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala  
 210 215 220

Val Lys Val Glu Lys Val  
 225 230

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 <211> 233  
 <212> PRT  
 <213> Mycobacterium smegmatis

<400> 12  
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 Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met  
 35 40 45  
 Glu Arg Asp Gly Leu Leu His Val Ala Gly Asp Arg His Leu Glu Leu  
 50 55 60  
 Thr Asp Lys Gly Arg Ala Leu Ala Val Ala Val Met Arg Lys His Arg  
 65 70 75 80  
 Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Asp  
 85 90 95  
 Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Glu Val  
 100 105 110  
 Glu Arg Arg Leu Val Gln Val Leu Glu Asn Pro Thr Thr Ser Pro Phe  
 115 120 125  
 Gly Asn Pro Ile Pro Gly Leu Thr Glu Leu Ala Val Thr Pro Gly Val  
 130 135 140  
 Asn Thr Glu Asp Val Ser Leu Val Arg Leu Thr Glu Leu Pro Val Gly  
 145 150 155 160  
 Met Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly  
 165 170 175  
 Asp Thr Asp Leu Ile Gly Arg Leu Lys Glu Ala Gly Val Val Pro Asn  
 180 185 190  
 Ala Arg Val Thr Val Glu Ala Asn Asn Asn Gly Gly Val Met Ile Val  
 195 200 205  
 Ile Pro Gly His Glu Gln Val Glu Leu Pro His His Met Ala His Ala  
 210 215 220  
 Val Lys Val Glu Lys Val Glu Lys Val  
 225 230

<210> 13  
 <211> 174  
 <212> PRT



<213> Mycobacterium tuberculosis

<400> 13

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			20					25					30		
Ala	Glu	Leu	Ala	Gly	Gln	Leu	Ala	Lys	Arg	Gly	Tyr	Pro	Glu	Asp	Ile
		35					40					45			
Gly	Asn	Arg	Val	Leu	Asp	Arg	Leu	Ala	Ala	Val	Gly	Leu	Val	Asp	Asp
	50					55					60				
Thr	Asp	Phe	Ala	Glu	Gln	Trp	Val	Gln	Ser	Arg	Arg	Ala	Asn	Ala	Ala
	65				70					75					80
Lys	Ser	Lys	Arg	Ala	Leu	Ala	Ala	Glu	Leu	His	Ala	Lys	Gly	Val	Asp
				85					90					95	
Asp	Asp	Val	Ile	Thr	Thr	Val	Leu	Gly	Gly	Ile	Asp	Ala	Gly	Ala	Glu
			100					105					110		
Arg	Gly	Arg	Ala	Glu	Lys	Leu	Val	Arg	Ala	Arg	Leu	Arg	Arg	Glu	Val
		115					120					125			
Leu	Ile	Asp	Asp	Gly	Thr	Asp	Glu	Ala	Arg	Val	Ser	Arg	Arg	Leu	Val
	130					135					140				
Ala	Met	Leu	Ala	Arg	Arg	Gly	Tyr	Gly	Gln	Thr	Leu	Ala	Cys	Glu	Val
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<210> 14

<211> 228

<212> PRT

<213> Brevibacterium lactofermentum

<400> 14

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			20					25					30		
Arg	Leu	Glu	Gln	Ser	Gly	Pro	Thr	Val	Ser	Gln	Thr	Val	Ala	Arg	Met
		35					40					45			
Glu	Arg	Asp	Gly	Leu	Val	His	Val	Ser	Pro	Asp	Arg	Ser	Leu	Glu	Met
	50					55					60				
Thr	Pro	Glu	Gly	Arg	Ser	Leu	Ala	Ile	Ala	Val	Met	Arg	Asn	Asp	Arg
	65				70					75					80

Leu	Ala	Glu	Arg	Leu	Leu	Thr	Asp	Ile	Ile	Gly	Leu	Asp	Ile	His	Lys	
				85					90					95		
Val	His	Asp	Glu	Ala	Cys	Arg	Trp	Glu	His	Val	Met	Ser	Asp	Glu	Val	
				100					105					110		
Glu	Arg	Arg	Leu	Val	Glu	Val	Leu	Asp	Asp	Val	His	Arg	Ser	Pro	Phe	
				115					120					125		
Gly	Asn	Pro	Ile	Pro	Gly	Leu	Gly	Glu	Ile	Gly	Leu	Asp	Gln	Ala	Asp	
				130					135					140		
Glu	Pro	Asp	Ser	Gly	Val	Arg	Ala	Ile	Asp	Leu	Pro	Leu	Gly	Glu	Asn	
				145					150					155		
Leu	Lys	Ala	Arg	Ile	Val	Gln	Leu	Asn	Glu	Ile	Leu	Gln	Val	Asp	Leu	
				165					170					175		
Glu	Gln	Phe	Gln	Ala	Leu	Thr	Asp	Ala	Gly	Val	Glu	Ile	Gly	Thr	Glu	
				180					185					190		
Val	Asp	Ile	Ile	Asn	Glu	Gln	Gly	Arg	Val	Val	Ile	Thr	His	Asn	Gly	
				195					200					205		
Ser	Ser	Val	Glu	Leu	Ile	Asp	Asp	Leu	Ala	His	Ala	Val	Arg	Val	Glu	
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Lys	Val	Glu	Gly													
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<210> 15
<211> 226
<212> PRT
<213> Corynebacterium diphtheriae
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Ala	Ala	Ala	Pro	Gly	Thr	Arg	Val	Ile	Asp	Ala	Ala	Thr	Ser	Met	Pro	
145					150					155					160	
Arg	Lys	Val	Arg	Ile	Val	Gln	Ile	Asn	Glu	Ile	Phe	Gln	Val	Glu	Thr	
165					170					175						
Asp	Gln	Phe	Thr	Gln	Leu	Leu	Asp	Ala	Asp	Ile	Arg	Val	Gly	Ser	Glu	
180					185					190						
Val	Glu	Ile	Val	Asp	Arg	Asp	Gly	His	Ile	Thr	Leu	Ser	His	Asn	Gly	
195					200					205						
Lys	Asp	Val	Glu	Leu	Leu	Asp	Asp	Leu	Ala	His	Thr	Ile	Arg	Ile	Glu	
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<213> Mycobacterium tuberculosis																
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Arg	Leu	Asp	Gln	Ser	Gly	Pro	Thr	Val	Ser	Gln	Thr	Val	Ser	Arg	Met	
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Glu	Arg	Asp	Gly	Leu	Leu	Arg	Val	Ala	Gly	Asp	Arg	His	Leu	Glu	Leu	
50					55					60						
Thr	Glu	Lys	Gly	Arg	Ala	Leu	Ala	Ile	Ala	Val	Met	Arg	Lys	His	Arg	
65					70					75					80	
Leu	Ala	Glu	Arg	Leu	Leu	Val	Asp	Val	Ile	Gly	Leu	Pro	Trp	Glu	Glu	
85					90					95						
Val	His	Ala	Glu	Ala	Cys	Arg	Trp	Glu	His	Val	Met	Ser	Glu	Asp	Val	
100					105					110						
Glu	Arg	Arg	Leu	Val	Lys	Val	Leu	Asn	Asn	Pro	Thr	Thr	Ser	Pro	Phe	
115					120					125						

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro  
130 135 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly  
145 150 155 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly  
165 170 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn  
180 185 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val  
195 200 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala  
210 215 220

Val Lys Val Glu Lys Val  
225 230

<210> 17  
<211> 235  
<212> PRT  
<213> Mycobacterium smegmatis

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20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met  
35 40 45

Glu Arg Asp Gly Leu Leu His Val Ala Gly Asp Arg His Leu Glu Leu  
50 55 60

Thr Asp Lys Gly Arg Ala Leu Ala Val Ala Val Met Arg Lys His Arg  
65 70 75 80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Leu Pro Trp Glu Asp Gly  
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Glu Val  
100 105 110

Glu Arg Arg Leu Val Gln Val Leu Glu Asn Pro Thr Thr Ser Pro Phe  
115 120 125

Gly Asn Pro Ile Pro Gly Leu Thr Glu Leu Ala Val Thr Pro Gly Val  
130 135 140

Asn Thr Glu Asp Val Ser Leu Val Arg Leu Thr Glu Leu Pro Val Gly  
145 150 155 160

Met Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly  
 165 170 175

Asp Thr Asp Leu Ile Gly Arg Leu Lys Glu Ala Gly Val Val Pro Asn  
 180 185 190

Ala Arg Val Thr Val Glu Ala Asn Asn Asn Gly Gly Val Met Ile Val  
 195 200 205

Ile Pro Gly His Glu Gln Val Glu Leu Pro His His Met Ala His Ala  
 210 215 220

Val Lys Lys Lys Val Glu Lys Val Glu Lys Val  
 225 230 235

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Asp Leu Glu Glu Glu Gly Ile Val Thr Pro Leu Arg Ala Arg Ile Ala  
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Glu Arg Pro Thr Val Ser Gln Thr Val Ser Arg Met Glu Arg Asp Gly  
 35 40 45

Leu Leu Arg Val Ala Gly Asn Arg His Leu Glu Leu Thr Thr Lys Gly  
 50 55 60

Arg Ala Met Ala Ile Ala Val Met Arg Lys His Arg Leu Ala Glu Arg  
 65 70 75 80

Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu Val His Ala Glu  
 85 90 95

Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val Glu Arg Arg Leu  
 100 105 110

Ile Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe Gly Asn Pro Ile  
 115 120 125

Pro Gly Leu Leu Asp Leu Gly Ala Gly Pro Asp Ala Ser Ala Ala Asn  
 130 135 140

Ala Lys Leu Val Arg Leu Thr Glu Leu Pro Ser Gly Ser Pro Val Ala  
 145 150 155 160

Val Val Val Arg Gln Leu Thr Glu His Val Asp Asp Ile Asp Leu Ile  
 165 170 175

Thr Arg Leu Lys Asp Thr Gly Val Val Pro Asn Ala Arg Val Thr Val

			180					185					190			
Glu	Thr	Ser 195	Pro	Ala	Gly	Asn	Val 200	Ile	Ile	Ile	Ile	Pro 205	Gly	His	Glu	
Asn	Val 210	Thr	Leu	Pro	His	Glu 215	Met	Ala	His	Ala	Val 220	Lys	Val	Glu	Lys	
Val 225																
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Arg	Leu	Asp 35	Gln	Ser	Gly	Pro	Thr 40	Val	Ser	Gln	Thr	Val 45	Ala	Arg	Met	
Glu	Arg 50	Asp	Gly	Leu	Val	Ser 55	Val	Ala	Ala	Asp	Arg 60	His	Leu	Glu	Leu	
Thr 65	Asp	Glu	Gly	Arg	Arg 70	Leu	Ala	Thr	Arg	Val 75	Met	Arg	Lys	His	Arg 80	
Leu	Ala	Glu	Cys	Leu 85	Leu	Val	Asp	Val	Ile 90	Gly	Leu	Glu	Trp	Glu 95	Gln	
Val	His	Ala	Glu 100	Ala	Cys	Arg	Trp	Glu 105	His	Val	Met	Ser	Glu 110	Ala	Val	
Glu	Arg	Arg 115	Val	Leu	Glu	Leu	Leu	Arg	His	Pro	Thr	Glu 125	Ser	Pro	Tyr	
Gly	Asn 130	Pro	Ile	Pro	Gly	Leu 135	Glu	Glu	Leu	Gly	Glu 140	Thr	Asp	Gly	Ala	
Asp 145	Pro	Phe	Leu	Asp	Glu 150	Gly	Met	Val	Ser	Leu 155	Ala	Asp	Leu	Asp	Pro 160	
Gly	Gln	Glu	Gly	Lys 165	Thr	Val	Val	Val	Arg	Arg	Ile	Gly	Glu	Pro 175	Ile	
Gln	Thr	Asp	Ala 180	Gln	Leu	Met	Tyr	Thr 185	Leu	Arg	Arg	Ala	Gly 190	Val	Gln	
Pro	Gly	Ser 195	Val	Val	Ser	Val	Thr 200	Glu	Ser	Ala	Gly	Gly 205	Val	Leu	Val	

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Val Phe Val Ala Lys Arg  
 225 230

<210> 20  
 <211> 215  
 <212> PRT  
 <213> Staphylococcus epidermidis

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 Met Leu Thr Glu Glu Lys Glu Asp Tyr Leu Lys Ala Ile Leu Thr Asn  
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Asp Gly Asp Val Ser Phe Val Ser Asn Lys Lys Leu Ser Gln Phe Leu  
 20 25 30

Asn Ile Lys Pro Pro Ser Val Ser Glu Met Val Gly Arg Leu Glu Lys  
 35 40 45

Glu Gly Tyr Val Glu Thr Lys His Tyr Lys Gly Ala Arg Leu Thr Glu  
 50 55 60

Glu Gly Leu Lys Gln Thr Leu Asp Ile Ile Lys Arg His Arg Leu Leu  
 65 70 75 80

Arg Leu Phe Leu Ile Glu Ile Leu Gln Tyr Asn Trp Glu Glu Val His  
 85 90 95

Gln Glu Ala Glu Ile Leu Glu His Arg Ile Ser Asp Leu Phe Val Glu  
 100 105 110

Arg Leu Asp Lys Ile Leu Asn Phe Pro Lys Thr Cys Pro His Gly Gly  
 115 120 125

Val Ile Pro Arg Gly Asn Ser Asp Ala Ala Ala Pro Gly Thr Ser Ile  
 130 135 140

Leu Asn Phe Glu Pro Gly Glu Arg Val Thr Val Arg Arg Val Arg Arg  
 145 150 155 160

Asp Lys Thr Glu Leu Leu Val Tyr Leu Ser Ser Lys Asp Ile Tyr Ile  
 165 170 175

Gly Asn Thr Val Glu Ile Val Ser Lys Asp Asp Thr Asn Lys Val Ile  
 180 185 190

Ile Leu Lys Arg Asn Asp Ile Val Thr Ile Leu Ser Tyr Glu Asn Ala  
 195 200 205

Met Asn Ile Phe Ala Glu Lys  
 210 215

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<211> 213  
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 <213> Staphylococcus aureus

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 Asn Ile Lys Pro Pro Ser Val Ser Glu Met Val Gly Arg Leu Glu Lys  
                   35                  40                  45  
 Ala Gly Tyr Val Glu Thr Lys Pro Tyr Lys Gly Val Arg Leu Thr Glu  
                   50                  55                  60  
 Asp Gly Leu Thr His Thr Leu Asp Ile Ile Arg His Arg Leu Leu Glu  
   65                  70                  75                  80  
 Leu Phe Leu Ile Glu Ile Leu Lys Tyr Asn Trp Glu Glu Val His Gln  
                   85                  90                  95  
 Glu Ala Glu Ile Leu Glu His Arg Ile Ser Asp Leu Phe Val Glu Arg  
                   100                  105                  110  
 Leu Asp Ser Leu Leu Asn Phe Pro Glu Thr Cys Pro His Gly Gly Val  
                   115                  120                  125  
 Ile Pro Arg Asn Asn Glu Tyr Lys Glu Lys Tyr Ile Thr Thr Ile Leu  
   130                  135                  140  
 Asn Tyr Glu Pro Gly Asp Ile Val Thr Ile Lys Arg Val Arg Asp Lys  
   145                  150                  155                  160  
 Thr Asp Leu Leu Ile Tyr Leu Ser Ser Lys Asp Ile Ser Ile Gly Asn  
                   165                  170                  175  
 Glu Val Glu Ile Val Ser Lys Asp Glu Met Asn Lys Val Ile Ile Ile  
                   180                  185                  190  
 Lys Arg Asn Asp Asn Val Ile Ile Val Ser Tyr Glu Asn Ala Met Asn  
                   195                  200                  205  
 Met Phe Ala Glu Lys  
   210

<210> 22  
 <211> 222  
 <212> PRT  
 <213> Enterococcus faecalis

<400> 22  
 Met Thr Pro Asn Arg Glu Asp Tyr Leu Lys Leu Ile Phe Glu Leu Gly  
   1                  5                  10                  15



Gly Asp Glu Val Lys Val Asn Asn Lys Gln Ile Val Ser Gly Leu Asp  
20 25 30

Val Ser Ala Ala Ser Val Ser Glu Met Ile Ser Lys Leu Val Lys Glu  
35 40 45

Asp Leu Val Glu His Ser Pro Tyr Gln Gly Val Gln Leu Thr Glu Lys  
50 55 60

Gly Leu Lys Lys Ala Ser Thr Leu Ile Arg Lys His Arg Ile Trp Glu  
65 70 75 80

Val Phe Leu Val Glu His Leu Asn Tyr Thr Trp Asn Asp Val His Glu  
85 90 95

Glu Ala Glu Val Leu Glu His Val Thr Ser Gln Thr Leu Val Asn Arg  
100 105 110

Leu Ala Asp Tyr Leu Asn His Pro Glu Phe Cys Pro His Gly Gly Val  
115 120 125

Ile Pro Glu Asp Asn Gln Pro Ile His Glu Glu Lys Arg Gln Thr Leu  
130 135 140

Thr Asp Tyr Pro Val Gly Thr Lys Ile Arg Ile Ala Arg Val Leu Asp  
145 150 155 160

Glu Lys Glu Leu Leu Asp Tyr Leu Val Ser Ile Asp Leu Asn Ile Gln  
165 170 175

Glu Glu Tyr Thr Ile Lys Glu Ile Ala Ala Tyr Glu Gly Pro Ile Thr  
180 185 190

Ile Tyr Asn Glu Asn Lys Glu Leu Ser Val Ser Phe Lys Ala Ala Asn  
195 200 205

Thr Ile Phe Val Glu Pro Leu Ile Arg Glu Ser Glu Glu Asn  
210 215 220

<210> 23

<211> 215

<212> PRT

<213> Streptococcus gordonii

<400> 23

Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Leu Tyr Glu Leu Gly  
1 5 10 15

Thr Arg His Asn Lys Ile Thr Asn Lys Glu Ile Ala Gly Leu Met Gln  
20 25 30

Val Ser Pro Pro Ala Val Thr Glu Met Met Lys Lys Leu Leu Ala Glu  
35 40 45

Glu Leu Leu Ile Lys Asp Lys Lys Ala Gly Tyr Leu Leu Thr Asp Leu  
50 55 60

Gly 65	Leu	Lys	Leu	Val	Ser 70	Asp	Leu	Tyr	Arg	Lys 75	His	Arg	Leu	Ile	Glu 80
Val	Phe	Leu	Val	His 85	His	Leu	Gly	Tyr	Thr 90	Thr	Glu	Glu	Ile	His 95	Glu
Glu	Ala	Glu	Val 100	Leu	Glu	His	Thr	Val 105	Ser	Asp	His	Phe	Val 110	Glu	Arg
Leu	Asp	Gln 115	Leu	Leu	Asp	Tyr	Pro 120	Lys	Ala	Cys	Pro	His 125	Gly	Gly	Thr
Ile	Pro 130	Ala	Lys	Gly	Glu	Leu	Leu 135	Val	Glu	Lys	His 140	Lys	Leu	Thr	Leu
Glu 145	Glu	Ala	Lys	Glu	Lys 150	Gly	Asp	Tyr	Ile	Leu 155	Ala	Arg	Val	His	Asp 160
Asn	Phe	Asp	Leu 165	Leu	Thr	Tyr	Leu	Glu 170	Arg	Asn	Gly	Leu	Gln	Val 175	Gly
Lys	Thr	Ile	Arg 180	Phe	Leu	Gly	Tyr	Asp 185	Asp	Phe	Ser	His	Leu 190	Tyr	Ser
Leu	Glu	Val 195	Asp	Gly	Gln	Glu	Ile 200	Gln	Leu	Ala	Gln	Pro 205	Ile	Ala	Gln
Gln 210	Ile	Tyr	Val	Glu	Lys	Ile 215									
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<212> PRT															
<213> Streptococcus mutans															
<400> 24															
Met 1	Thr	Pro	Asn	Lys 5	Glu	Asp	Tyr	Leu	Lys 10	Ile	Ile	Tyr	Glu	Leu 15	Ser
Glu	Arg	Asp	Glu 20	Lys	Ile	Ser	Asn	Lys 25	Gln	Ile	Ala	Glu	Lys 30	Met	Ser
Val	Ser	Ala 35	Pro	Ala	Val	Ser	Glu 40	Met	Val	Lys	Lys	Leu 45	Leu	Leu	Glu
Asp	Leu 50	Val	Leu	Lys	Asp	Lys 55	Gln	Ala	Gly	Tyr	Leu 60	Leu	Thr	Lys	Lys
Gly 65	Gln	Ile	Leu	Ala	Ser 70	Ser	Leu	Tyr	Arg	Lys 75	His	Arg	Leu	Ile	Glu 80
Val	Phe	Leu	Met	Asn 85	His	Leu	Asn	Tyr	Thr 90	Ala	Asp	Glu	Ile	His 95	Glu
Glu	Ala	Glu	Val	Leu	Glu	His	Thr	Val	Ser	Asp	Val	Phe	Val	Glu	Arg

110

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Ile Asn Asn Leu Pro Leu  
130 135 140

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Ala Asp Ile Lys Glu Ala Gly Ala Tyr Arg Leu Thr Arg Val His Asp  
 145 150 155 160

Ser Phe Asp Ile Leu His Tyr Leu Asp Lys His Ser Leu His Ile Gly  
 165 170 175

Asp Gln Leu Gln Val Lys Gln Phe Asp Gly Phe Ser Asn Thr Phe Thr  
 180 185 190

Ile Leu Ser Asn Asp Glu Asp Leu Gln Val Asn Met Asp Ile Ala Lys  
 195 200 205

Gln Leu Tyr Val Glu Lys Ile Asn  
 210 215

<210> 26  
 <211> 216  
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 Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Ile Tyr Glu Ile Gly  
 1 5 10 15

Ile Asp Leu His Lys Ile Thr Asn Lys Glu Ile Ala Ala Arg Met Gln  
 20 25 30

Val Ser Pro Pro Ala Val Thr Glu Met Ile Lys Arg Met Lys Ser Glu  
 35 40 45

Asn Leu Ile Leu Lys Asp Lys Glu Cys Gly Tyr Leu Leu Thr Asp Leu  
 50 55 60

Gly Leu Lys Leu Val Ser Glu Leu Tyr Arg Lys His Arg Leu Ile Glu  
 65 70 75 80

Val Phe Leu Val His His Leu Asp Tyr Thr Ser Asp Gln Ile His Glu  
 85 90 95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Leu Phe Val Glu Arg  
 100 105 110

Leu Asp Lys Leu Leu Gly Phe Pro Lys Thr Cys Pro His Gly Gly Thr  
 115 120 125

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Ile Asn Asn Leu Pro Leu  
 130 135 140

Ala Asp Ile Lys Glu Ala Gly Ala Tyr Arg Leu Thr Arg Val His Asp  
 145 150 155 160

Ser Phe Asp Ile Leu His Tyr Leu Asp Lys His Ser Leu His Ile Gly  
 165 170 175

Asp Gln Leu Gln Val Lys Gln Phe Asp Gly Phe Ser Asn Thr Phe Thr  
 180 185 190

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Ile Leu Ser Asn Asp Glu Asp Leu Gln Val Asn Met Asp Ile Ala Lys  
195 200 205

Gln Leu Tyr Val Glu Lys Ile Asn  
210 215

<210> 27

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Consensus  
sequence

<400> 27

gtagggttagg ctaacctat

19

<210> 28

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Consensus  
sequence

<400> 28

ttaggttagg ctaacctaa

19

<210> 29

<211> 19

<212> DNA

<213> *Corynebacterium diphtheriae*

<400> 29

ttaggatagc ttacaccta

19

<210> 30

<211> 19

<212> DNA

<213> *Streptomyces pilosus*

<400> 30

ttaggttagg ctcaccta

19

<210> 31

<211> 19

<212> DNA

<213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: 16S ribosomal RNA

<400> 31  
 ccagggtatc taatcctgt 19

<210> 32  
 <211> 19  
 <212> DNA  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: 19 kDa antigen

<400> 32  
 gcaggccagt gaaacctgt 19

<210> 33  
 <211> 20  
 <212> DNA  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: htrA homologue

<400> 33  
 acaggtggtg ctcaaccacg 20

<210> 34  
 <211> 20  
 <212> DNA  
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 <223> Description of Unknown Organism: phoP homologue

<400> 34  
 gaaggtaacg ttcaaccaat 20

<210> 35  
 <211> 20  
 <212> DNA  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: adhB homologue

<400> 35  
 gcaggtgacc gtcaaccgat 20

<210> 36  
 <211> 19

<212> DNA  
<213> Unknown Organism

<220>

<223> Description of Unknown Organism: narG homologue

<400> 36

gaaggtcaac caaacaaga

19

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